

# MISSOURI MONTHLY VITAL STATISTICS

## *Provisional Statistics*

*From The*



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### ***Focus. . . Trends in Cesarean Section Births by Selected Characteristics***

One of the Healthy People 2000 Maternal and Infant Objectives was to reduce the cesarean section rate to no more than 15 per 100 deliveries. This objective is not likely to be achieved for Missouri or the United States with rates of 22.1 and 22.0 (1) percent respectively for 1999.

Figure 1 shows that the cesarean section rate declined from 23.1 percent in 1990 to a low of 20.4 percent for 1997; and increased after that year. A very similar trend is presented for white mothers having live births during the 1990s. The 1990 African-American cesarean section rate of 18.6 percent was over 22 percent lower than the corresponding rate for whites. The African-American cesarean section rate was very flat in the first half of the decade and since then has converged upwards towards the white rate. For 1999 the African-American rate of 20.2 was approximately 10 percent lower than the corresponding white rate.

Table 1 was developed to see if the overall changes in cesarean section rates in the 1990s were related to particular factors. As with an earlier review of cesarean sections (2); women having factors relating to higher socioeconomic status (e.g. higher education level, higher age, non-Medicaid women and those having adequate prenatal care) are more likely to have a cesarean section. The 1996-97 period showed decreases from the 1990-91 period for most categories reviewed. However, increases in cesarean rates of over 2 percent were observed for African-Americans (2.8%), less than 32 weeks gestation (13.4%), 32-36 weeks gestation (3.2%), less than 1500 grams (10.2%) and dysfunctional labor (8.7%). The 1998-99 period showed a reversal in that the cesarean rate for most categories increased from the 1996-97 period with some rates approaching or surpassing those observed for the 1990-91 period.

Increases above 10 percent were noted for the cesarean rate between 1990-91 and 1998-99 periods for: less than 32 weeks gestation (26.0%), less than 1500 grams (18.5%), dysfunctional labor (17.5%), and African-American (11.6%). Currently over half of VLBW (less than 1500 grams) infants are delivered by cesarean. The cesarean rate for post-term (greater than 41 completed weeks gestation) infants declined from 22.5 to 20.2 percent over the decade, while the rate of

post-term births declined from 13.8 to 9.4 percent of all births. During the same period the cesarean rate for term infants (37-41 completed weeks) declined from 22.0 to 20.3 percent and the rate of term births increased from 76.6 to 80.4 percent of all births. This and other research indicates that pregnancies are not being allowed to go post-term (3); that induction of labor and elective cesarean section are used prior to that time.

Certain complications of labor and delivery have a high association with cesarean sections. Some of these complications are referred to as 'hard' (e.g. breech) in the sense that they are easily identified and not subject to differing interpretations although there are differing interpretations on when to deliver by cesarean section. There are other complications of labor and delivery having a high association with cesarean sections which are considered 'soft' (e.g. dysfunctional labor) in the sense that they are subject to differing interpretations. The total number of births noting hard diagnoses for cesarean section for the 1990-91 and 1998-99 periods were very similar at 11,108 and 11,001 respectively; while their percent of total births changed from 7.0 to 7.3 percent. This increase was due to the 20 percent increase in the percent of births noted as multi-fetal pregnancies (e.g. twins, triplets). There were decreases for all other hard diagnoses for cesareans. The cesarean rate for hard diagnoses did not vary much over the decade.

The total percent and number of births noting soft diagnoses for cesareans decreased during the 1990s with the same for each diagnosis except for non-breech mal-presentation and dysfunctional labor, which remained basically constant. Fetal distress was noted for 10,272 (6.5%) of 1990-91 births and for 8,740 (5.8%) of 1998-99 births. The decline for cephalopelvic disproportion was even more dramatic; changing from 7,103 (4.5%) to 3,777 (2.5%) over the same period. Prolonged labor was also observed as decreasing during the decade; declining from 1,684 (1.1%) to 1,104 (0.7%).

The overall cesarean rate for these combined soft diagnoses did not vary much over the decade. This was also the case for all the noted individual soft diagnoses

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except for dysfunctional labor, which showed an increase from 68.6 percent to 80.6 percent over the decade.

Our prior (1) review of cesarean sections showed large variations in rates by hospitals. In order to reduce the variability due to patient mix; hospital cesarean section rates for 1998-99 were calculated just for women having full-term, singleton deliveries with vertex presentation. Cesarean rates were related to size of hospital, with the lowest rate (16.0 percent) noted for hospitals having between 500-1500 full-term singleton, vertex presentation deliveries per year. Rates of 18.4 and 18.2 were noted for hospitals having 100 to 500, and greater than 1500 deliveries per year, respectively. There are large variations within each grouping of hospitals by size. For the largest hospitals the lowest cesarean rate of 13.2 percent was noted for a Kansas City hospital and the highest rate of 20.4 percent was noted for a hospital in Springfield. Both of these hospitals are considered perinatal tertiary care centers and therefore are expected to have high-risk women as a large proportion of their obstetrical patient load.

For midsize hospitals the cesarean rate varied from 9.1 percent to 30.8 percent. The cesarean rate for the smallest hospitals varied from 9.9 percent to 33.1 percent. All these differences in cesarean section rates indicate that physician's practice style has a lot to do with a given hospital rate.

Another area where physician practice plays a part is with repeat Cesareans. Nearly two decades ago the consensus development task force convened by the National Institute of Health offered recommendations on the use of a trial of labor for women who have had a prior Cesarean delivery. As Figure 2 shows, these recommendations resulted in increases in vaginal births after cesareans (VBAC) from 21.0 percent in 1990 to 31.6 percent in 1996. However, since 1996 the rate has decreased to 25.0 percent for 1999. Only one-in-four deliveries involving women having a prior cesarean delivery were delivered vaginally. VBAC rates were inversely related to the size of the hospital delivery service with 29.5, 28.2 and 27.9 percent noted respectively.

Women having cesarean deliveries are at a higher risk for morbidity and mortality for this and future deliveries than women delivering vaginally (4). However, an unsuccessful trial of labor has been associated with maternal and infant complication (5). There is debate over what the cesarean section rate should be and when to perform a cesarean section (6). In July, 1999 the American College of Obstetricians and Gynecologists (ACOG) issued a new practice bulletin strongly supporting VBAC, but recommending a cautious approach and consideration of individual risk factors before attempting a trial of labor (5). This more cautious approach may lead to increases in repeat and total cesareans.

That there is such large variation in cesareans by the above reviewed categories points to the fact that physician

practice affects these rates. The institution of the National Institutes of Health and American College of Obstetricians and Gynecologists guidelines have not resulted in a significant decrease in cesarean sections or an increase in vaginal births after cesarean; and the more recent guidelines may have the opposite effect.

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Figure 1  
Trends in Cesarean Births by Race of Mother:  
Missouri Resident Births 1990-1999

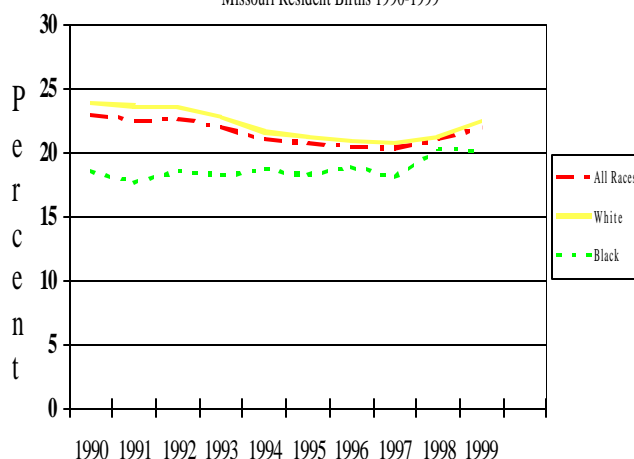


Figure 2  
Trends in Vaginal Births After Cesarean Births by  
Race of Mother: Missouri Resident Births 1990-1999

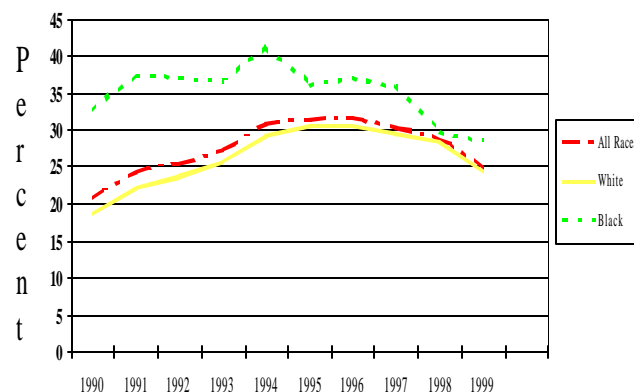


Table 1  
 Number and Percent Cesarean Sections with Percent Changes Between  
 1990-1991, 1996-1997 and 1998-1999 by Selected Characteristics:  
 Missouri Resident Births

Category	1990 -1991		1996-1997		1998-1999		90-91 verses 96-97	96-97 verses 98-99
	Number	Percent	Number	Percent	Number	Percent	Percent Change	Percent Change
White Mothers	30,505	23.8	25,516	20.9	27,255	21.9	-12.2	4.8
African-American Mothers	4,920	18.1	4,102	18.6	4,577	20.2	2.8	8.6
Mother's Age <20	3,610	15.9	2,998	14.5	3,147	15.3	-8.8	5.5
20 - 34	28,827	23.4	22,961	20.6	24,594	21.6	-12.0	4.9
35 and Over	3,558	30.1	4,306	28.0	4,810	29.6	-7.0	5.7
Parity - First Born	15,586	24.7	13,098	21.7	13,945	23.0	-12.1	6.0
Second - Third	17,460	22.4	14,427	20.0	15,666	21.1	-10.7	5.5
Fourth or Higher	2,955	17.9	2,743	18.0	2,943	18.5	0.6	2.8
GT 15% Underweight for Height	2,522	17.1	1,438	13.7	1,408	14.3	-19.9	4.4
Normal Weight for Height	20,981	20.7	15,167	17.6	15,943	18.5	-15.0	5.1
GE 20% Overweight for Height	10,773	31.3	12,114	27.7	13,760	28.6	-11.5	3.2
Mother's Education <12 Yrs	6,225	18.6	4,704	16.7	5,159	17.7	-10.2	6.0
12 Years	14,371	23.2	10,419	21.0	10,618	21.7	-9.5	3.3
>12 Years	15,076	24.9	14,933	21.8	16,562	23.2	-12.4	6.4
Mother on Medicaid	9,696	19.2	10,935	18.8	11,511	19.8	-2.1	5.3
Not on Medicaid	25,095	24.5	18,286	21.7	19,823	22.7	-11.4	4.6
Inadequate Prenatal Care	4,383	16.8	2,498	16.2	2,492	16.8	-3.6	3.7
Adequate Prenatal Care	29,307	24.1	25,631	21.1	28,084	22.2	-12.4	5.2
<32 Weeks Gestation	978	36.5	959	41.4	1,169	46.0	13.4	11.1
32 - 36 Weeks	3,250	28.0	3,291	28.9	3,685	30.7	3.2	6.2
37 - 41 Weeks	25,337	22.0	21,638	19.3	23,495	20.3	-12.3	5.2
42 Weeks or Longer	4,662	22.5	2,811	19.5	2,751	20.2	-13.3	3.6
< 1,500 Grams	840	46.0	896	50.7	1,105	54.5	10.2	7.5
1,500 - 2,499 Grams	2,936	32.6	2,822	32.6	3,162	35.2	0	8.0
2,500 - 4,499 Grams	29,561	21.5	24,131	18.9	25,992	19.8	-12.1	4.8
4,500 Grams or Greater	920	38.1	865	38.0	846	38.4	-0.3	1.1
Hard Diagnosis for Cesarean	8,194	73.8	7,678	72.9	8,059	73.3	-1.2	0.5
Breech	5,556	89.7	5,161	90.1	5,341	91.4	0.4	1.4
Multiple Birth	2,166	54.2	2,179	53.2	2,519	55.6	-1.8	4.5
Abruptio Placenta	719	60.0	722	60.0	686	58.3	0	-2.8
Placenta Previa	490	81.4	418	81.5	411	79.0	0.1	-3.1
Umbilical Cord Prolapse	331	78.1	258	78.2	246	77.1	0.1	-1.4
Soft Diagnosis for Cesarean	16,002	64.1	12,508	63.2	12,989	64.4	-1.4	1.9
Non-Breech Malpres.	1,486	47.1	1,274	45.1	1,363	45.7	-4.2	1.3
Prolonged Labor	719	42.7	506	43.2	441	39.9	1.2	-7.6
Dysfunctional Labor	4,439	68.6	4,509	74.6	5,017	80.6	8.7	8.0
Ceph. Disproportion	6,992	98.4	4,077	98.1	3,691	97.7	-0.3	-0.4
Fetal Distress	5,590	54.4	4,556	54.4	4,792	54.8	0	0.7
Total	36,001	22.8	30,268	20.5	32,554	21.6	-10.1	5.4

## Provisional Vital Statistics for July 2000

**Live births** increased in July as 6,539 Missouri babies were born compared with 6,467 births in July 1999. However, this increase is primarily due to a longer reporting period this year as the rate decreased. Cumulative births for the 7- and 12-month periods ending with July both show increases. For January-July, births increased by 3 percent from 43,853 to 45,175.

**Deaths** decreased in July as 4,134 Missourians died compared with 4,230 one year earlier. Cumulative deaths for the 7- and 12-month periods ending with July show virtually no change compared with the previous year.

The **Natural increase** in July was 2,405 (6,539 births minus 4,134 deaths). The natural increase rate in July was 5.0 per 1,000 population.

**Marriages** decreased slightly for all three time periods shown below while **dissolutions of marriage** increased for all three time periods. The marriage to divorce ratio for the 12 months ending with July decreased from 1.78 to 1.70.

**Infant deaths** increased slightly for all three time periods shown below. For the 12 months ending with July the infant death ratio increased from 7.3 to 7.7 per 1,000 live births.

### PROVISIONAL VITAL STATISTICS FOR JULY 2000

Item	July				Jan.-July cumulative				12 months ending with July				
	Number		Rate*		Number		Rate*		Number		Rate*		
	1999	2000	1999	2000	1999	2000	1999	2000	1999	2000	1998	1999	2000
<b>Live Births .....</b>	6,467	6,539	14.8	13.6	43,853	45,175	13.9	14.1	76,466	77,080	13.7	14.0	14.0
<b>Deaths .....</b>	4,230	4,134	9.7	8.6	32,819	32,720	10.4	10.2	54,757	54,856	9.8	10.0	10.0
<b>Natural increase ...</b>	2,237	2,405	5.1	5.0	11,034	12,455	3.5	3.9	21,709	22,224	3.9	4.0	4.1
<b>Marriages .....</b>	4,691	4,544	10.8	9.5	25,318	25,015	8.0	7.8	44,174	44,066	8.0	8.1	8.0
<b>Dissolutions .....</b>	2,067	2,085	4.7	4.3	14,315	15,726	4.5	4.9	24,830	25,994	4.7	4.6	4.7
<b>Infant deaths .....</b>	45	47	7.0	7.2	332	337	7.6	7.5	558	593	7.9	7.3	7.7
<b>Population base ....</b> (in thousands)	...	...	5,468	5,500	...	...	5,468	5,500	...	...	5,426	5,457	5,487

\* Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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